·Clinical Research·

Assessment of visual outcomes of cataract surgery in Tujia nationality in Xianfeng County, China

Jing Yuan[1], Xia Wang[2], Li-Qin Yang[2], Yi-Qiao Xing[1], Yan-Ning Yang[1]

[1]Eye Center, Renmin Hospital of Wuhan University, Wuhan 430060, Hubei Province, China
[2]Department of Ophthalmology, Xianfeng County Renmin Hospital, Xianfeng 445600, Hubei Province, China
Correspondence to: Jing Yuan. Eye Center, Renmin Hospital of Wuhan University, Jiefang Road # 238, Wuhan 430060, Wuhan Province, China. xyj711@163.com
Received: 2014-03-10 Accepted: 2014-07-18

Abstract

• **AIM: To evaluate the visual outcome and factors influencing visual outcome of manual small incision cataract surgery (MSICS) in the rural area in the Xianfeng County.**

• **METHODS: Eighty –two eyes of 82 patients who underwent cataract surgery performed by using MSICS technique were identified. Data collected included each patient´s age, gender, the level of education. Uncorrected and corrected distance visual acuity (UDVA and CDVA) at presentation and at 1, 6, 8wk postoperatively, pre –existing eye disease, operative findings and complications, the risk factors were evaluated.**

• **RESULTS: In 82 patients, the average age was 69.6± 0.6y, illiterate were 52 (63.4%). Of 82 eyes, pseudophakia was present in 77 eyes (93.9%). At 1wk postoperatively, 47 eyes (57.3%) had the UDVA of ≥6/18, and 52 eyes (63.4%) had the CDVA of ≥6/18. At 6 to 8wk postoperatively, 50 eyes (61.0%) had UDVA of ≥6/18, and 57 eyes (69.5%) had the CDVA of ≥6/18. Postoperative visual status was significantly related to the co –morbidities, such as corneal pathology, glaucoma(P<0.001). Operative complications, such as posterior capsule opacity and cystoid macular edema were main operative cause for the poor visual outcome.**

• **CONCLUSION: MSICS provides a good visual recovery in our study but the vision outcome did not fulfill the standards proposed by WHO, which highlights the need for an improvement in local socioeconomic understanding, population education and surgery quality.**

• **KEYWORDS:** cataract surgery; manual small incision cataract surgery; visual outcome; co-morbidities; operative complications

DOI:10.3980/j.issn.2222–3959.2015.02.14

Yuan J, Wang X, Yang LQ, Xing YQ, Yang YN. Assessment of visual outcomes of cataract surgery in Tujia nationality in Xianfeng County, China. *Int J Ophthalmol* 2015;8(2):292–298

INTRODUCTION

Cataract continues as the leading cause of blindness in developing countries, including China[1-3]. Increasing age is associated with an increasing prevalence of cataract. As Chinese population ages, cataract-induced visual dysfunction and blindness is on the increase. Cataract surgery is the only way to cure these patients with cataract and restore their vision. So, the demographic changes will lead to a doubling in the need for cataract. In recent years, the number of people who undergo cataract surgery indeed increased rapidly [4]. However, this surgery is not equally available to all, and where it is available it does not produce equal outcomes[5-12]. Results from several population-based studies conducted show the visual outcome faced difficulties to meet the standards proposed by the World Health Organization (WHO) (more than 85% of operated eyes should have >6/18 vision at six weeks following cataract surgery) [13-16]. A few studies in China have also reported the outcome of cataract surgery under different setting [11,12,14-16]. The main aim of this study was to report the visual outcome of inpatients who had cataract surgery and to identify the reasons for a poor outcome among subjects residing in a rural district of Hubei, China.

SUBJECTS AND METHODS

Subjects The study was undertaken in the Department of Ophthalmology, Renmin hospital of Xianfeng County from January 1, 2012 to January 1, 2013. The department mainly serves a minority population, mostly Tujia nationality in Xianfeng County, Which is a mountainous town of the Enshi Autonomous Prefecture in the Hubei Province (Figure 1A) located in the southwestern Hubei Province and borders of Chongqing and Hunan Provinces. The hospital has two full time ophthalmologists who operate on cataract patients using the technique of manual small incision cataract surgery (MSICS).

Study Patient and Procedures Our subjects in this retrospective case study were due to cataract as the principal cause for their visual impairment. All the cases aged 40y or older were studied and details before and after cataract surgery were recorded. It did not include theses patients who

Table 1 Porfile of the patient operated for cataract *n* (%)

Age (a)	Gender (M:F)	Literate (M:F)	Illiterate (M:F)	Nuclear cataract (M:F)	Cortical cataract (M:F)	Posterior subcapsule cataract (M:F)	Pseudophakia (M:F)	Aphakia (M:F)
40-49, 2 (2.4)	1:1	1:1	0:0	0:0	0:0	1:1	1:1	0:0
50-59, 13 (15.9)	7:6	7:5	0:1	0:2	2:3	5:1	5:5	2:1
60-69, 19 (23.2)	8:11	4:1	4:10	4:2	4:8	0:1	8:11	0:0
70-79, 38 (46.3)	19:19	6:1	13:18	16:15	2:4	1:0	17:19	2:0
≥80, 10 (12.2)	6:4	4:0	2:4	6:4	0:0	0:0	6:4	0:0
Total, 82 (100)	41:41	22:8	19:33	26:23	8:15	7:3	37:40	4:1

had surgery for traumatic cataracts, or who had other ocular procedures performed at time of cataract extraction. Data collected included each patient's age, gender, the level of education (literate or illiterate), uncorrected and corrected distance visual acuity (UDVA and CDVA) at presentation following up after one week of surgery and finally after 6 to 8wk of surgery, pre-existing eye disease, the preoperative, intraoperative, and postoperative findings and complications. The detailed examination included evaluation by instrumentation including slit lamp microscopy, ophthalmotonometer, gonioscopy, direct as well as indirect ophthalmoscopy, ultrasound (A+B) scan. The degree of lens opacity was graded after mydriasis with anterior segment slit-lamp and divided into cortical, nuclear, and posterior subcapsular opacities according to the Lens Opacities Classification System II (LOCS II)[17]. The vision was tested with the help of Snellen's distant vision chart and the visual gain was measured using the WHO recommended method of using postoperative visual status at 6 to 8wk postoperatively[13]. Age of the patients was classified as 40-49, 50-59, 60-69, 70-79, 80 and above years. The data was entered on worksheet (Microsoft XL). Descriptive statistical measures such as mean, standard deviation, ratios and proportions were computed. Bivariate correlation tests and Chi-square tests were used to evaluate the association of different risk factors with CDVA using Statistical Package for Social Studies (SPSS 13.0). Statistical level of significance was preset at 0.05. This study was approved by the Institutional Review Board (IRB) /Ethics Committee of Renmin Hospital of Xianfeng County and conducted in accordance with Declaration of Helsinki. Due to the retrospective nature of the study, informed consent was specifically waived by the approving IRB.

Surgical Technique MSICS was prepared with retrobulbar anesthesia with a mixture of 1 mL of 20 g/L lidocaine and 1 mL of 5 g/L bupivacaine HCl. A superior rectus bridle suture was applied with 4'0 silk. A fornix-based conjunctival flap was made from 10 to 2 o'clock position. And then a 5.5-6 mm-long straight scleral tunnel incision was made using a crescent knife, 2.0 mm from the limbus. A sclero-corneal tunnel was dissected with a crescent, with 1-2 mm dissection into the cornea. The anterior chamber was entered with a 3.2 mm keratome and the internal lip of the incision was extended up to 7-8 mm, taking care to cut inwards. The anterior chamber was filled with viscoelastic before making canopener capsulotomy. Hydrodissection, subsequently followed by hydrodelineation, was performed. The anterior cortical debris was removed as much as possible in order to manipulate the hard core nucleus easily. The nucleus was prolapsed into the anterior chamber and was hydro-extracted with an irrigating vectis. The epinucleus and residual cortex were aspirated with a simcoe canula and a 6.5 mm polymethyl methacrylate (PMMA) posterior chamber intraocular lens (IOL) was implanted into the capsular bag. Patients with posterior capsule rupture or zonular dialysis without vitreous loss underwent IOL implantation in the ciliary sulcus. In patients with vitreous loss, vitreous was subtracted manually and the patient was left aphakic. The wound was then closed with the conjunctiva without a suture. If wound leakage occurred, the wound was sutured with 1 stitch with polene 10/0. At the completion of surgery, the surgeon injects subconjunctival antibiotic and steroid.

RESULTS

Age, Gender and Literate A total of 82 eyes in 82 patients were admitted with cataract surgery during the period time from January, 2012 to January, 2013. The profile of the examined sample is given in Table 1. In 82 patients with cataract, the average age was 69.6±10.6y with a range of 41-88y. The number of patients was equal in male and female patients. In 40 eyes (48.8%) the right eye was operated, in 42 eyes (51.2%) the left eye was operated. Among 82 patients, 30 (36.6%) patients were literate and 52 (63.4%) patients were illiterate. Illiterate predominance significantly occurred in a range of 70-79y. Female had significantly higher rates of illiterate compared to male (χ^2=10.3, P=0.001).

Degrees of Lens Opacity and Co-morbidities Cataracts were classified as follows according to LOCS II: 1) nuclear cataract, significant nuclear opacities or colors; 2) cortical cataract, significant cortical opacities; 3) posterior subcapsular cataract, significant posterior subcapsular opacities (3% above of the posterior capsule). In our study, 49 (59.8%) eyes had the "nuclear cataract" type of cataract, 23 (28.0%) eyes had the "cortical cataract" type of cataract,

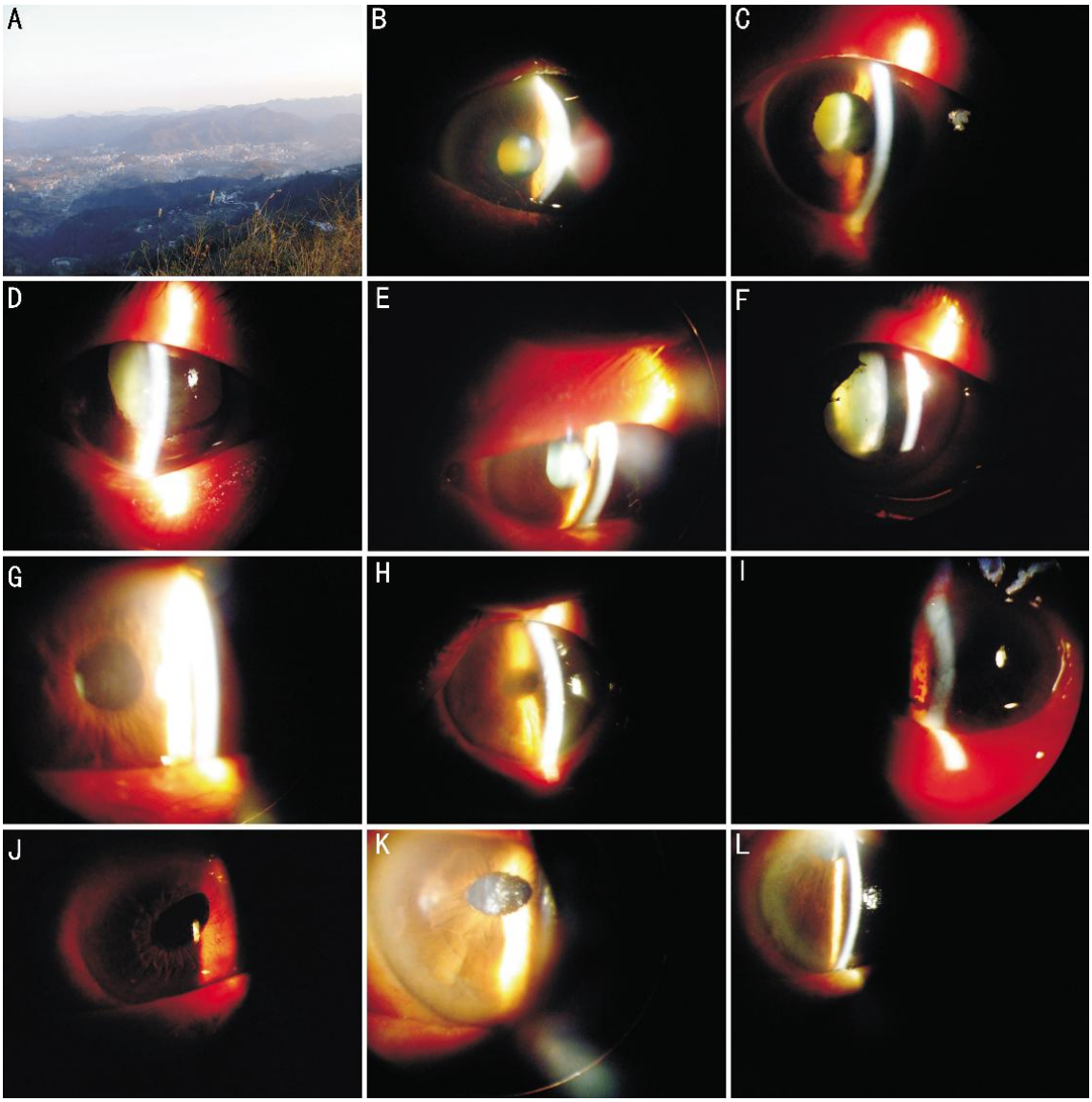

Figure 1 Clinical performances of the subjects underwent cataract surgery in this study A panoramic view of Xianfeng County from mountain (A), trachomatous trichiasis (B), corneal opacity (C), glaucoma with intumescent lens (D), chronic angel-closure glaucoma (E), old iridocyclitis (F), residual cortex (G), corneal edema and Descemen's membrane folds (H), hyphema (I), misshapen puil (J), posterior capsule opacity (K), pupil displacement (L) were showed.

and 10 (12.2%) eyes had the "posterior subcapsule cataract" type of cataract (Table 1). The presence of co-morbidities were noted prior to surgery in our operated cohort and was also evaluated (Table 2).The most common co-morbiditie was complication was corneal pathology (Figure 1B, 1C). Other co-morbidities included glaucoma (Figure 1D, 1E), old iridocyclitis (Figure 1F) pterygium, age-related macular degeneration, *etc*.

Operative Findings and Complications Intraoperative and postoperative complication were categorized using Oxford Cataract Treatment Evaluation Team (OCTET)[18]. According to OCTET grading, 43 eyes (52.4%) had one or more operative complication. The most common intraoperative complication was iris prolapse and residual cortex (Figure 1G). There were no eyes of dropped nucleus, or suprachoroidal hemorrhage to be observed in operation. The most obviously immediate postoperative complication at 1d postoperatively included corneal edema and Descemen's membrane folds (Figure 1H) and hyphema (Figure 1I). There was no wound leakage and severe iritis to be observed after one week of surgery. Corneal edema and mild iritis could decrease by day 5 with topical steroid treatment. Hyphemas could spontaneously be cleared within 4 postoperative days without intervention. The most common delayed postoperative complication (complication occurred after 6 to 8wk postoperatively) was misshapen pupil (Figure 1J) and posterior capsule opacity (PCO) (Figure 1K). Others included pupil displacement (Figure 1L) and cystoid macule edema *etc*. No severe complication, such as endophthalmitis or corneal decompensation, occurred in any of the eyes after any time of surgery. Pseudophakia was present in 77 eyes (93.9%), and aphakia in 5 eyes (6.1%). The main reasons

Table 2 Effect of preoperative ocular co-morbidities on visual outcome 6-8wk after surgery *n* (%)

Co-morbidity	'Good' CDVA	'Borderline'+ 'Poor' CDVA	Statistic data
Anterior segment	15 (18.3)	10 (12.2)	
Corneal pathology	9	7	
Trachomatous corneal opacity	3	4	
Scar of old keratitis	4	3	
Other corneal opacity	2	0	
Pterygium	3	0	
Glaucoma	2	3	
Old iridocyclitis	1	0	
Post segment diseases	3 (3.7)	11 (13.4)	
Age-related macular degeneration	0	5	
Diabetic retinopathy	1	3	
Myopic degeneration	2	0	
Optic atrophy	0	3	
No morbidity reported	40 (48.8)	5 (6.1)	
Total	58 (70.7)	26 (31.7)	r =-0.464, P<0.001

Total more than 82 as some eyes had more than one cause for visual outcome.

Table 3 Postoperative visual outcome by preoperative visual status *n* (%)

Preoperative vision	UDVA at 1wk				CDVA at 1wk			
	Good	Borderline	Poor	Total	Good	Borderline	Poor	Total
6/18-6/6	0	0	0	0	0	0	0	0
<6/18-6/60	2 (2.4)	0	0	2 (2.4)	2 (2.4)	0	0	2 (2.4)
<6/60	45 (54.9)	21 (25.6)	14 (17.1)	80 (97.6)	50 (61.0)	20 (24.4)	10 (12.2)	80 (97.6)
Total	47 (57.3)	21 (25.6)	14 (17.1)	82 (100)	52 (63.4)	20 (24.4)	10 (12.2)	82 (100)

Table 3 Postoperative visual outcome by preoperative visual status (continued) *n* (%)

Preoperative vision	UDVA at 6-8wk				CDVA at 6-8wk			
	Good	Borderline	Poor	Total	Good	Borderline	Poor	Total
6/18-6/6	0	0	0	0	0	0	0	0
<6/18-6/60	2 (2.4)	0	0	2 (2.4)	2 (2.4)	0	0	2 (2.4)
<6/60	48 (58.5)	22 (26.8)	10 (12.2)	80 (97.6)	55 (67.1)	18 (22.0)	7 (8.5)	80 (97.6)
Total	50 (61.0)	22 (26.8)	10 (12.2)	82 (100)	57 (69.5)	18 (22.0)	7 (8.5)	82 (100)

why IOLs were not inserted in these eyes could related to operative complications such as posterior capsule rupture with vitreous loss (3 eyes, 3.7%), and patient selection (2 eyes, 2.4%, that is, the power of the lens to be implanted in one eye with high myopia was determined to be 1-2 diopter with the help of A-scan ultrasound, and so an IOL was not inserted due to patient's requirement).

Visual Outcome UDVA and CDVA results in the operated eyes are shown in Table 3. The findings showed that CDVA of all eyes was similar to UDVA before surgery. The visual gain was evaluated by using preoperative visual stratus as reference and was assessed using the WHO recommended method. The findings showed that the proportion of UDVA and CDVA were not significantly different respectively at 1wk postoperatively and at 6 to 8wk postoperatively (UDVA: χ^2=0.783, P=0.676; CDVA: χ^2=0.864, P=0.649).

Effect of preoperative ocular co-morbidities on visual outcome at 6 to 8wk postoperatively was presented in Table 2. Twenty eyes with a CDVA of <6/18 showed pre-existing eye diseases, including one eye with two co-morbidities. Visual gain was significantly better among eyes without co-morbidities. Co-morbidities were thought to be correlated for this poor visual outcome (r =-0.464, P <0.001). Relationship between operative complication and visual outcome at 6 to 8wk postoperatively was presented in Table 4. PCO and cystoid macular edema were main cause for the poor visual outcome.

The association of age, sex, literacy and refraction with CDVA at 6 to 8wk postoperatively was explored that is shown in Table 5. Because there were only two patients in the age group 40-49y, we considered 40-59y as one age group. CDVA were not significantly associated with the subject's sex, literacy and refraction, but significantly associated with the subject's age.

Table 4 Relationship between operative complications and visual outcome 6 -8wk after surgery *n* (%)

Complications	OCTET grading	'Good' CDVA	'Borderline'+ 'Poor' CDVA
Intraoperative complications			
Iris prolapse	I, 10 (12.2)	4 (4.9)	6 (7.3)
Residual cortex	I, 8 (9.8)	1 (1.2)	7 (8.5)
Posterior capsule (with no vitreous loss)	II, 3 (3.7)	1 (1.2)	2 (2.4)
Posterior capsule (with vitreous loss)	III, 3 (3.7)	0 (0)	3 (3.7)
Radial tear of capsular	I, 3 (3.7)	0 (0)	3 (3.7)
Zonular dialysis	II, 1 (1.2)	1 (1.2)	0 (0)
Immediate postoperative complications			
Corneal edema or Descement's membrane folds	I, 23 (28.0)	12 (14.6)	11 (13.4)
Pigmentation deposition on IOL	I, 5 (6.1)	2 (2.4)	3 (3.7)
Mild iritis (<50 cells in 2×1 mm^2 slit beam)	I, 4 (4.9)	1 (1.2)	3 (3.7)
Hyphema	I, 3 (3.7)	2 (2.4)	1 (1.2)
Delayed postoperative complications			
Misshapen pupil	I, 9 (11.0)	4 (4.9)	5 (6.1)
Posterior capsular opacification	II, 8 (9.8)	1 (1.2)	7 (8.5)
IOL decenteration	I, 1 (1.2)	1 (1.2)	0 (0)
Pupil displacement	II, 1 (1.2)	0 (0)	1 (1.2)
Cystoid macule edema	III, 1 (1.2)	0 (0)	1 (1.2)
No operative complications reported	39 (47.6)	38 (46.3)	1 (1.2)
Total	122 (148.8)	68 (82.9)	54 (65.9)

Total more than 82 as some eyes had more than one operative complications for visual outcome.

Table 5 Bivariate correlation analyses for risk factors in cataract operated eyes by CDVA at 6-8wk *n* (%)

Parameters	Good	Borderline	Poor	Total	Statistic data
Age (a)					r=0.238, P=0.017
40-59	11 (13.4)	3 (3.7)	1 (1.2)	15 (18.3)	
60-69	17 (20.7)	1 (1.2)	1 (1.2)	19 (23.2)	
70-79	25 (30.5)	12 (14.6)	1 (1.2)	38 (46.3)	
⩾80	4 (4.9)	2 (2.4)	4 (4.9)	10 (12.2)	
Gender					r=0.031, P=0.774
M	29 (35.4)	9 (11.0)	3 (3.7)	41 (50)	
F	28 (34.1)	9 (11.0)	4 (4.9)	41 (50)	
Education status					r=0.161, P=0.136
Literate	24 (29.3)	4 (4.9)	2 (2.4)	30 (36.6)	
Iliterate	33 (40.2)	14 (17.1)	5 (6.1)	52 (63.4)	
Refraction status					r=-0.089, P=0.241
Before refraction	50 (61.0)	22 (26.8)	10 (12.2)	82 (100)	
After refraction	57 (69.5)	18 (22.0)	7 (8.5)	82 (100)	

DISCUSSION

The data reported herein are the findings of inpatients located in the rural area in the Xianfeng County. Although it is not a population-based study and the samples were limited, the results should be representative of cataract surgery outcomes in Tujia nationality in Enshi. In our study, it was interesting to note that 97.6% of the patients had visual acuity of <6/60 at the time of cataract surgery, and there were high rate of illiteracy in elderly population, especially older women. In this area, many old people, especially elderly females, who mostly had no choice to attend school when they were young, have to leave to stay home since their children or husband work outside. They, named as empty nest seniors, mostly have to dependent on outdoor agrarian activities to provide for themselves and their grandchildren, thus are enforced to accept more exposure ultraviolet-B (UV-B), this is considered as a risk factor of cataract development [19,20]. The cumulative effect, including age, exposure of UV-B, high prevalence of diabetes, and so on, finally results in overspeed development of cataract, like the mature or hypermature cataract as we have seen in this study [21]. Thus, it reasonable to suspect that the higher burden in old women with illiterate is due, at least in part, to a greater risk of cataract development.

Visual Outome and Refractive Influence for Poor Outcome In our study, a CDVA of ≥6/18 was achieved in 52 eyes (63.4%) at 1wk postoperatively, and this result increased to 57 eyes (69.5%) at 6 to 8wk postoperatively. Considering the patien's preoperative acuity status (97.6% of eyes had a VA of <6/60), this visual outcome is a marked improvement. Moreover, the visual outcome was much better than those in other rural districts in China ten years before[15,16] and was slightly better than that in urban southern China[11]. However, it could not fulfill the standards proposed by WHO[1]. Recently, Gogate *et al*[9] and Khanna *et al*[10] reported higher rates of CDVA (89.8% of eyes had a CDVA of ≥6/18 and 84.3% of eyes had a CDVA of ≥6/12) with the same MSICS in India. When compared with other similar studies in China, our study also had poorer visual outcomes following cataract surgery than that in Beijing Eye Study (79.7% of eyes had a PVA of ≥6/18)[12]. This result may due to the differences in the study population, surgery quality, post-surgical care and surgical apparatus *etc*. In our study, we observed that a UDVA of ≥6/18 was achieved in 47 eyes (57.3%) and 50 eyes (61.0%) at 1wk and 6 to 8wk respectively, and the CDVA increased to 52 eyes (63.4%) and 57 eyes (69.5%) respectively, which hinted that uncorrected refractive error was an important cause of a poor visual outcome in spite of no statistically significant difference between the two(P=0.241). Although deviation from emmertropia or uncorrected high astigmatism as component of refractive error was not analyzed in our study, it can still be assumed the causes as follows: calculation error of IOL power before surgery, aphakic eyes where an IOL could not inserted in the process of surgery, or against-rule astigmatism by the superior scleral incision using MSICS. These refractive error should be pay attention to by patients themselves and ophthalmologists and be rehabilitated with a spectacle lens in order to improve the visual outcome of patients since surgery.

Co-morbidity and the Influence for Poor Outcome One of the notable findings of this work was the number of ocular co-morbidity before cataract extraction. In our study, 16 of 82 eyes with corneal pathology have 7 eyes of 'borderline'+'poor' CDVA after surgery, which showed that corneal pathology was the most common cause of visual impairment and blindness. It is a matter of concern and the reasons are as follows: firstly, in Xianfeng county, trachoma could be infected, especially in elderly people because of their bad hygienic habits; Secondly, it has higher rates of pneumonia (such as tuberculosis, chronic obstructive pulmonary disease *etc*) and diabetes where local people often have to suffer from cold wet climate in autumn and winter, which are main causes for them easily infected by virus [22]; Thirdly, it is a documented fact the people often ignore minor corneal trauma during agricultural work or in the home so that microbial keratitis develops following a corneal ulcer or severe corneal scarring. Except for corneal opacity, glaucoma and age-related macular degeneration were also the common co-morbidities before surgery easily ignored by local people, especially those illiterate patients, and also were the common cause of poor CDVA after cataract surgery. These two co-morbidities and other post segment diseases such as diabetic retinopathy, myopic degeneration and optic atrophy were often not examined by ophthalmologists because of mature and hypermature cataract. In spite of this, it is often worth operating on eyes in order to improve the vision field by cataract extraction. Certainly, as life expectancies increase in China, the influence of coexisting ocular pathologies on visual outcomes will become more marked, highlighting the importance of a thorough preoperative assessment that includes a dilated posterior segment examination and a thorough comprehension by the patient who have a desire and necessity of surgery before cataract extraction.

Operation and Influence for Poor Outcome MSICS is more cost-effective, less technologically dependent than phacoemulsification and can be used for any nuclear grading of cataract hardness, thus could have a more benefical role in the underdeveloped rural area [9,10]. Our result achieved acceptable UDVA and CDVA postoperatively, showing it was cost-effective for visual rehabilitation. In our study, Iris prolapse was the most frequent intraoperative complication because of the hydrostatic pressure during nuclear removal, which probably occurred when the procedures were done in operation, that is, one was a deep scleral tunnel incision, second was an early perforation into the anterior chamber of the wound. Thus, a superficial scleral tunnel (0.2 mm) and a right time of corneal perforation are very important to prevent iris prolapse. In addition, the lens glide used during hydroexpression also prevents iris prolapse in the operative procedure. Transient corneal edema and hyphema were the most prevalent postoperative complication. Corneal edema may occur during the nuclear removal through the clear corneal incision when corneal endothelial may be damaged, which could decrease by day 5 with topical steroid treatment. Hyphemas may be associated with a deep scleral tunnel incision or inadequate treatment with an electric cautery to stop bleeding. It could spontaneously be cleared within 4 postoperative days without intervention. A striking finding of this study was the number of misshapen pupil, almost 11.0% of eyes at 6-8wk follow up, which were mainly in part due to the shape and material of implanted low-cost IOL because of the local patients' economic limit in spite of partial support by nowadays rural cooperative medical service. Above and other operative complication such as mild iritis, pigmentation deposition on IOL, radial tear capsular, IOL decenteration were the "Grade I" complication, which were not likely to result in a marked drop in visual acuity. The most severe postoperative complication was posterior capsule rupture with vitreous loss. It was a main cause that IOL had not been implanted in these eyes, which resulted in a poor outcome of UDVA after operation. The reasons may be as follows: 1) in

our study, patients mainly were main elderly people of age 70-79y, who mostly had hypermature and morganian cataracts, this, combined with the recognized weaker zonules of hypermature cataracts, which may result in a higher incidence of surgically related posterior capsule rupture; 2) it is likely that some eyes had potentially sight threatening disease before surgery such as corneal opacity (3 eyes with corneal opacity had ruptured posterior); 3) good depth of focus could not be obtained by the existing operating microscope so that posterior capsules were easily ruptured when the residual cortex was removed with manual irrigation-aspiration. Cystoid macula edema was another severe postoperative complication. It could induce a poor outcome of UDVA, which could be not corrected with a spectacle. In addition, PCO could also cause the poor visual outcome. Possible reasons to this may be residual cortex in operation, and the existing low-cost of IOLs. Possible solutions to this escalating problem may be the provision of high-grade IOLs of a shape and material that reduces the risk of PCO and/or the provision of more laser facilities at district level.

In summary, we reported the postoperative outcomes of cataract surgery for a nationally representative sample of minority inpatients in Xianfeng County. These surgeries were done with MSICS, a cost-effective procedure without phacoemulsification machine or sutures. It provides a good visual recovery in our samples but the vision outcome did not fulfill the standards proposed by WHO, which highlights the need for local socioeconomic understanding, population education for raising awareness about ocular illnesses, thorough preoperative assessment, standardizes training of surgical technique, supply of higher quality operating microscopes and IOLs, postoperative monitoring and very importantly audit of outcomes to ensure the highest possible quality of surgical service[1].

ACKNOWLEDGEMENTS

The authors acknowledge the invaluable assistance of Jian-Xiong Yu , M.D. (Department of Gastrointestinal Surgery, Renmin Hospital of Wuhan University) with regard to statistical analysis.

Foundations: Supported by National Natural Science Fundation of China (No.81100664); Wuhan Science and Technology Dawn Project (No.2014070404010222); Wuhan University Independent Research Project (No.2042014kf0259); Open Project of the State Key Laboratory of Ophthalmology, Zhongshan Ophthalmic Center (No.303060202400306).

Conflicts of Interest: Yuan J, None; **Wang X,** None; **Yang LQ,** None; **Xing YQ,** None; **Yang YN,** None.

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